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# Inflationary universe from perfect fluid and F (R) gravity and its comparison with observational data

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## Abstract

© 2014 American Physical Society. We investigate the descriptions for the observables of inflationary models, in particular, the spectral index of curvature perturbations, the tensor-t--scalar ratio, and the running of the spectral index, in the framework of perfect fluid models and F(R) gravity theories through the reconstruction methods. Furthermore, the perfect fluid and F(R) gravity descriptions of inflation are compared with the recent cosmological observations such as the Planck satellite and BICEP2 experiment. It is demonstrated with explicit examples that perfect fluid may lead to the inflationary universe consistent with the Planck data. It is also shown that several F(R) gravity models, especially, a power-law model gives the best fit values compatible with the spectral index and tensor-to-scalar ratio within the allowed ranges suggested by the Planck and BICEP2 results.

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